

NON-CONTACT THRUST FORCE SENSOR ASSEMBLY

ABSTRACT OF THE DISCLOSURE

A non-contact sensor assembly measures an in-line driving thrust force that is applied to a rotating shaft. The sensor assembly includes a hollow torque-shaft with a magnetoelastic element and a thrust shaft that is inserted within the hollow torque-shaft. Keys are formed on thrust shaft and keyways are formed on the hollow torque-shaft. The keys are received within the keyways to lock the thrust shaft and hollow torque-shaft together but still permit a small amount of axial movement between the shafts. Helical spline recesses are formed on the thrust shaft and corresponding spline projections are formed on the hollow torque-shaft. The projections are received within the recesses to translate the thrust force into a twisting force. A magnetometer cooperates with the magnetoelastic element to measure the amount of twisting force and determine the amount of thrust force.

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